

SHORT STUDIES IN THE CHRYSOMELIDÆ (COLEOPTERA)

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Most of the following notes, descriptions, etc., and others, published elsewhere, have been written at various times in the past years while devoting some of my little spare time to the study and investigation of Chrysomelidæ.

With the transfer of the museum's collections to Washington some of the type specimens from which the descriptions were drawn are now in the National Museum collection and are so mentioned under the descriptions; otherwise the types are in my own collection.

Aulacoscelis ventralis new species.

Aulacoscelis femorata Schaeffer not Jacoby.

MALE: Rather elongate testaceous, elytra paler, antennæ, except the first joint, fuscous; first and second ventral segment black; tibiæ at apex more or less blackish.

Head not constricted behind the eyes, which latter are small and entire as usual; surface irregularly not closely punctate, punctures moderate; inter-antennal space with a well defined elevated ridge on each side, separated from each other by a moderately deep and broad impression. Antennal joints compressed basally, longer than wide, joints six to eleven, more slender than the preceding joints. Pronotum slightly wider than long, oblique behind; anterior angles slightly prominent; transverse groove near base very feeble, the usual longitudinal plica on each side of the groove absent; surface irregularly punctate with moderately large punctures, laterally more or less distinctly pubescent. Scutellum transverse, pubescent. Elytra at base slightly wider than the pronotum at base, about twice as long as wide; sides nearly parallel but slightly narrowing towards apex, surface not costate, near the umbo feebly impressed, rather finely, irregularly punctate and moderately closely pubescent. Ventral segments rather sparsely punctate and sparsely pubescent, first and last segments slightly longer than each of the intermediate segments. Last segment triangularly emarginate. Length 8.25 mm.

FEMALE: Differs from the male in having the head and pronotum narrower, the antennal joints shorter and relatively a little stouter, the ventral segments unicolorous pale, the first ventral segment as long as the three

following, the last with a slight moderately broad projection at middle of apical margin and the legs slightly less shorter. Length 7.25 mm.

Huachuca Mts., Arizona. Type, male, and female allotype and three paratypes in the Nat. Museum collection, also paratypes in my collection.

This is the species identified and recorded by me as *femorata*, but a renewed examination and study of the specimens and description forces me to the conclusion that it is not *femorata* nor any other of the described Mexican species. The description of *femorata* fairly agrees with our insect except that the antennal joints of the males are not "rather short and robust" and the femora in the male are not "much more strongly developed" than in the female but only slightly so in the former. Also the difference in size and coloration of the first ventral segment of male and female, if present in *femorata*, would not have been overlooked by its author.

The measurements are taken from the apical margin of prothorax to the apex of elytra.

Syneta carinata Mann.

This species is recorded from Alaska, Idaho and Utah and I have also a male from Dilley, Oregon, which agrees in every respect with Lacordaire's description. The latter had a male and female collected by Eschscholz from which Mannerheim also had received the types of his species.

Lacordaire says that it is the largest of the species then known to him but I have some eastern specimens which are smaller, about 5-6 mm., which do not seem to differ otherwise, except in coloration and prominence of the elytral costæ both of which are possibly variable. These eastern specimens are from Mt. Mansfield, Vermont, June (Engelhardt); Maplecrest, Catsk. Mts., N. Y. June (Schott); Slide Mt. and Whiteface Mt. trail, N. Y., July (Shoemaker); Mt. Mitchell, N. C., June (Nicolay); also a specimen from Scott Glacier, Alberta, June, and one from Waldport, Oregon, July (Davis) which do not seem to differ from the eastern specimens.

The sculpture of pronotum in all these is variable, some more densely punctate than others and the coloration is also very variable.

As far as my material shows, the size does not seem to differ so much in the species of this genus and these smaller specimens are perhaps entitled to a varietal name but on account of the limited material of typical *carinata* I leave this for future investigation.

Syneta hamata Horn

Specimens of this species were taken at Lake Josephine and Iceberg Lake, Glacier Park, Montana, by Mr. Howard Notman and at Edmonton, Alberta, by Mr. F. S. Carr.

Zeugophora scutellaris Suffr.

This European species has a wider distribution than is given in the Leng catalogue. It has been taken at Arlington, N. J., June, by Mr. H. B. Weiss; at Williston, Wilms Co., N. D., June, by Mr. Howard Notman, and at Trinity Val., B. C. (J. R. L. Howell), the latter in the collection of Mr. Ralph Hopping.

Crioceris duodecimpuncta dodecastigma Suffr.

This is listed as var. in the European catalogue and occurs also in North America. It differs from typical *duodecimpunctata* in having the underside and legs entirely black. I have taken both, the typical form and the variety, on the same plant.

Lema margineimpressa new species.

Form nearly as in *collaris* but a little stouter, color above and below more or less dark blue, except tarsi and antennæ, which are black. Head scarcely constricted behind the eyes; antennal joints moderately stout. Pronotum rather moderately constricted laterally; sub-basal impression deep; surface smooth except the usual geminate row of punctures medially and a few well separated punctures near each anterior angle. Each elytron with ten entire rows of moderate punctures; intervals flat, smooth, not costate at apex; sub-basal transverse impression deep, also a deep impression laterally a little below the humerus. Abdomen smooth with scarcely any punctures; posterior femora not stouter than the intermediate femora and scarcely longer. Length 4.5 mm.

Arizona.

This species differs from *concolor* Lec., the only other uniformly colored blue North American *Lema*, by slightly more robust form, ventral segments almost without punctures and the

presence of a rather deep lateral post humeral and discal impression of each elytron. The Mexican *cærulea*, which is also a uniformly blue species with lateral post-humeral elytral impression, has the ninth row of punctures on each elytron interrupted at middle and the elytral intervals at apex are elevated.

***Lema simulans*, new species.**

Form, size and coloration as in *cornuta* but base of tibiae and entire femora red, frontal tubercles of head less prominent and smaller, ocular orbits between the tubercles and eyes wider. Length 5 mm.

Medicine Lodge, Kansas.

Except for the differences given above this species is otherwise much like *cornuta* and is possibly only a western race of the latter.

***Lema palustris floridana* new variety.**

Like typical *palustris* in form and size but antennal joints narrower and more elongate and the elytra bright green.

Enterprise, Florida (O. Dietz).

***Lema longipennis* Linell.**

This species is recorded only from Colorado, but has been taken by Mr. E. L. Bell at Dewey Lake, Cherry Co., Nebraska, and I have also a specimen from Riverside, Illinois.

***Lema conjuncta* Lac. var. *circumvittata* Clark.**

L. circumvittata is listed as a distinct species but is only a variation of *conjuncta* in which the yellow basal spot on each elytron is absent. This spot is variable. In some specimens it is very large; in others exceedingly small. Both the spotted and unspotted forms occur together.

***Lema nigrovittata* Guer.**

L. notativentris Schffr.

Looking over the species of *Lema* in the Biologia, shortly after I described *L. notativentris* my attention was arrested by Mr. Jacoby's remarks on *Lema nigrovittata* which seemed to apply very well also to my recently described *notativentris* and after carefully reading Guérin's and Lacordaire's descriptions I became convinced that my species is synonymous with *nigrovittata*

and the California specimens received from the late Ricksecker and other sources under that name were not that species but on closer examination appeared to me to be only a western form of the common *trilineata*. Since then I had seen specimens of the true *nigrovittata* from other sources and have named them correctly for some of my correspondents and have also returned California specimens with the manuscript name *trilineata californica* which was later described by Mr. Fall as var. *nigriventris*.

Besides the slightly different form *L. nigrovittata* differs from the western variety of *trilineata* with narrow lateral elytral vittæ—*trivirgata* Lec.—in having the head always entirely black, the black pronotal spots never on the disk as in *trilineata* and varieties but in the lateral excavation and the narrow lateral black vittæ of elytra are never close to the lateral margin but separated from it by two or three intervals and are occasionally interrupted medially. The ventral segments may be entirely pale, or more or less marked with black; the legs also are marked more or less with black.

It occurs in this country in Arizona and New Mexico. Mr. Fall* reports it as very common in Southern California, but this has to be verified; they are very likely what almost everybody used to call erroneously *nigrovittata* and which he later described as var. *nigriventris*.

***Lema trivittata californica* n.n.** *proposed!!*

L. trivittata nigriventris Fall not Gerst.

L. nigrovittata auct, not Guer.

As stated above this is what used to be called *nigrovittata* and for which Mr. Fall proposed more recently the name *nigriventris*. The name *nigriventris*, however, is preoccupied in the genus by an African species described by Gerstäcker and I propose therefore to use my manuscript name *californica* for this form under which it possibly stands in some collections.

This race is apparently found only in California and differs from specimens from Texas, Arizona, Utah, Colorado, etc., by the usually darker coloration of head; underside and legs and

* Occas. Papers, Cal. Acad. Sc. VIII. P. 152.

having the lateral elytral vittæ broad, as in typical *trilineata*. The head is often entirely black; the black pronotal spots generally larger, more or less quadrate, sometimes transversely confluent and occasionally the thorax is almost entirely black. The black lateral vittæ of the elytra extend in some specimens to the fourth or fifth interval; the underside and legs are usually more or less black.

Lema trilineata trivittata Say.

L. immaculicollis Chev.

L. trivirgata Lec.

L. nigrovittata Schaef. not Guer.

This western race has the lateral elytral vittæ narrower than typical *trilineata* and the California form, occupying the last or the last two elytral intervals. It is very variable. Some have the head, underside and legs colored as in typical *trilineata*, that is, reddish, except tibiæ near apex and frequently side pieces of metasternum; in others they are marked more or less with black and the first three or four joints of antennæ are occasionally reddish; the interocular triangle is more or less pubescent. The black spots of pronotum are often very small or absent; these latter are *immaculicollis* of Chevrolat.

As Say described his *trivittata* from specimens taken at the base of the Rocky Mountains and as typical *trilineata*, to my knowledge, do not occur so far west, they are apparently the same as Leconte's *trivirgata* and therefore Say's name is accepted for this variety, otherwise the rather misleading name *immaculicollis* would have to be used.

In this form as in the new race *medionota* the lateral elytral vittæ are occasionally interrupted before middle.

The specimens taken in the Brooklyn Botanic Garden by Mr. Engelhardt and recorded by me as *nigrovittata* rather belong here as all have the lateral elytral vittæ narrow, though the head, underside and legs are marked more with black, than in most of the western specimens.

While this is apparently a common western form, I have seen one or two specimens from Mobile, Alabama (Loding), one from Washington, D. C. (Shoemaker) and one from Evergreen

Cemetery, Long Island (Siepmann) which have to be placed here on account of the narrow elytral vittæ. The last two may be accidental introductions but those from Alabama are possibly not. In Alabama typical *trilineata* and race *trivittata* apparently meet and occur together with a new southeastern race. They undoubtedly interbreed the offspring belonging either to one or the other of the three forms or combining characters or markings of two.

Certain southeastern specimens with narrow elytral vittæ, however, differ from the western specimens and appear to be a distinct race. They have the head pale, but have a spot of variable size on the interocular triangle and the ocular orbits black. In some specimens the interocular spot is united with the black orbits forming a transverse black fascia between the eyes, a maculation I haven't seen in any of the numerous western specimens examined. In the latter the interocular triangle is always pale even then when the head is more or less marked with black. In the race *californica* the interocular triangle is apparently also the last part of the head to become black. In consideration of all this I think that these are entitled to a name and are described below.

***Lema trilineata medionata* new variety.**

Like var. *trivittata* with narrow elytral vittæ and sutural interval only black. Head with a spot on interocular triangle and ocular orbits black; interocular triangle apparently more distinctly pubescent than in any of the other forms; antennæ black, except first joint which is reddish below. Length 7 mm.

Florida, Daytona (Bather), Alabama, Dauphin Isld., (Loding); North Carolina; Virginia (O. Dietz).

The black interocular spot is variable in size and in some specimens extends to the black ocular orbits forming one broad transverse fascia but the head behind and the anterior part of the neck is pale, the posterior part of the latter black. One specimen from North Carolina with a black, transverse interocular fascia has the ventral segments largely black and anterior and intermediate femora spotted with black.

***Lema trilineata* Oliv.**

Typical *trilineata* have the lateral black elytral vittæ wide, occupying more or less the last three or four elytral intervals, the underside red, metasternal side pieces occasionally more or

less black; head, including ocular orbits red, first joint of antennæ red, the rest black; femora red, tibiæ red but apical half or less and tarsi black.

It is the common form of eastern North America and is less variable than its western races. Specimens are found occasionally without the two black spots on the pronotum and rarely a few may have the apex of femora more or less narrowly black.

Two specimens, one from North Carolina and one from Mobile, Alabama, the latter in the collection of Mr. H. P. Loding, are marked and colored as in typical *trilineata*, with wide black elytral vittæ and underside pale, etc., but the head in both specimens has a large, median interocular spot and the ocular orbits black. These, as suggested above under var. *trivittata*, are possibly the offsprings of a union between typical *trilineata* and race *medionota*. I place these provisionally as an aberration of typical *trilineata* but they could equally well be placed as such with race *medionota*.

I also place here as individual variation two specimens, which have the elytral vittæ narrow as in the western variety *trivittata*. One of these is from Ithaca, N. Y., and the other from Minnesota. In these specimens the lateral vittæ occupy the entire last interval from base to near apex, while in all the specimens of var. *trivittata* and also var. *medionota* I have seen the black lateral vittæ are removed from the lateral margin basally for a short distance.

Lema melanocephala Say.

It is strange that this apparently distinct species has never been found again since its description. It could not be an accidental aberration as Say had more than one specimen, some of which he had received from Dr. T. W. Harris. Say compares it in form with *trilineata* but with unicolorous rufo-testaceous pronotum and elytra, both without any black markings, and head, underside and legs black. An easy recognizable species when found.

Lacordaire in his remarks following the description of *nigrovittata* suggests that Say's *melanocephala* might possibly be a variety of the former but no specimens of that species are re-

corded to have the underside and legs entirely black, moreover the former is known only from Mexico and the Southwest while Say's species came from the Northwest.

Since Crotch's table of *Lema* has been published a number of species and varieties have been added and to assist in the identification of these the following table, which I had made for my own use, may also prove useful to others.

KEY TO THE NORTH AMERICAN SPECIES OF *LEMA* FAB.

1. Elytra unicolorous blue or black, including the lateral margins, surface without markings 2
 Elytra maculate, fasciate, vittate or entirely pale, when blue without markings, lateral margins pale 16
2. Pronotum entirely blue or black 3
 Pronotum red, occasionally marked more or less with black 5
3. Pronotum black (L. Cal.) *peninsulae* Cr. 4
 Pronotum blue 4
4. Elytra with a short, deep, lateral impression below the humeral umbone, ventral segments sparsely punctate.
 (Ariz.) *marginempressa* n. sp.
 Elytra without lateral impression, ventral segments closely punctate.
 (N. Mex.) *concolor* Lec.
5. Head red 6
 Head entirely or in great part black 13
6. Head not bituberculate 7
 Head strongly bituberculate 9
7. Legs more less red (Tex.) *texana* Cr. 8
 Legs entirely black 8
8. Ninth elytral stria not interrupted at middle, prothorax clear red.
 (Ariz.) *orizonae* Schffr.
 Ninth elytral stria interrupted at middle, prothorax red with or without a black spot at middle (S. E. U. S.) *sayi* Cr.
9. Ventral segments of abdomen red 10
 Ventral segments of abdomen black 11
10. Femora at apex and tibiae black (S. E. U. S.) *cornuta* F.
 Femora and base of tibiae red (Kans.) *simulans* n. sp.
11. Legs entirely red, antennal joints one to four red, the following black.
 (Col.) *coloradensis* Linell
 Legs and antennae black 12
12. Antennal joints rather short and robust, elytra dark blue.
 (E. U. S.) *palustris* Blatch.
 Antennal joints narrower and more elongate, elytra bright green and more shining (Fla.) *palustris floridana* n. var.

13. Head strongly bituberculate, pronotum scarcely constricted laterally and anteriorly more or less black (Fla.) *brunnicollis* Lac.
Head not bituberculate or only feebly so 14
14. Pronotum alutaceous, marked more or less with black.
(S. E. U. S.) *maculicollis* Lac.
Pronotum shining, clear red 15
15. Small species, length about 4 mm. (Kans.-Ind., Fla.) *collaris* Say
Larger and more elongate species, length about 5.5 mm.
(Col., Neb., Ill.) *longipennis* Linell
16. Elytra black or blue without or with lateral margins yellow and marked with transverse reddish-yellow fasciæ, spots or without any markings on the disk but then with lateral margins yellow 17
Elytra yellow or red, either vittate, ornate with black or without markings 24
17. Elytral margin yellow 18
Elytral margin black or blue 21
18. Pronotum red 19
Pronotum black 20
19. Elytra with a reddish spot at middle of base (Fla.) *conjuncta* Lac.
Elytra, except the yellow lateral margin, entirely blue without markings (Fla.) *conjuncta circum-vittata* Clark
Elytra with a transverse reddish-yellow median fasciæ, connected laterally with the pale marginal vittæ (S. E. U. S.) *solani* Fab.
20. Each elytron with a large, yellow basal spot connected laterally with the pale marginal vitta, near apex a narrow arcuate fasciæ also connected laterally with the pale marginal vitta, this fasciæ occasionally reduced to one or two yellow spots.
(S. Fla., Ariz.) *confusa trabeata* Lac.
21. Pronotum black 22
Pronotum red 23
22. Elytra with large yellow basal spot extending narrowly along base to the lateral margin (L. Cal.) *confusa omogera* Horn
Elytra with a transverse, yellow or reddish fasciæ at middle, occasionally with a narrow, arcuate subapical fasciæ on each side, reduced sometime to one or two spots (Ariz.) *balteata* Lec.
23. Elytra with a transverse median fasciæ and a narrow, slightly arcuate subapical fasciæ yellow or reddish (Ariz.) *balteata equestris* Lac.
24. Ninth elytral striæ interrupted at middle 33
Ninth elytral striæ not interrupted at middle 25
25. Pronotum entirely black, elytra pale with sutural and lateral vittæ black (S. Fla.) *confusa* Chev.
Pronotum pale, either with or without black spots or markings; elytra entirely pale or with black vittæ 26
26. Elytra with an entire sutural vitta 28
Elytra without or with at most a short, wide sub-scutellar vitta 27

27. Elytra without sutural and lateral vittæ, head, underside and legs black (N. W. U. S.) *melanocephala* Say
 Elytra with a short sub-scutellar vitta, lateral vittæ towards its apex much dilated and occasionally reaching the suture apically; head and prothorax pale or marked more or less distinctly with black.
 (Tex.) *opulenta* G. & H.
28. Lateral elytral vittæ absent, entirely yellow except antennæ, tarsi, sutural interval and met-episterna black (L. Cal.) *flavida* Horn
 Lateral elytral vittæ present, head, pronotum, legs and underside variable in coloration and markings 29
29. Lateral elytral vittæ removed from the margin, occupying the sixth or seventh elytral intervals; head black, black pronotal spots in the lateral impressions (N. Mex., Ariz.) *nigrovittata* Cuen.
 Lateral elytral vittæ close to the lateral margin, occupying the last two or more elytral intervals; coloration of head, underside and legs variable; black pronotal spots, when present, always on the disk 30
30. Lateral elytral vittæ wide, occupying the last three or more elytral intervals 31
 Lateral elytral vittæ narrow, occupying at most the last two intervals. 32
31. Head, body below and legs reddish, except apex of tibiæ, tarsi and usually the met-episterna black (E. U. S.) *trilineata* Oliv.
 Head, body below and legs more or less marked with black.
 (Cal.) *trilineata californica* n. n.
32. Head with a black spot on interocular triangle and ocular orbits black, or by extension of the black median spot the latter becomes connected with the black ocular orbits forming a broad, transverse interocular fascia (S. E. U. S.) *trilineata medionota* n. var.
 Head variable, either without or with black markings or almost entirely black, but interocular triangle always more or less pale and never with a black median spot only W. U. S. *trilineata trivittata* Say
33. Legs entirely red, or red with tarsi only black 34
 Legs more or less black 35
34. Antennæ and legs entirely reddish, elytra either immaculate, with three black spots on each side and a short, common sutural vitta near base or with a broad piceous sutural vitta of irregular outline.
 (L. Cal.) *aemula* Horn
 Antennæ black, except first four joints, which are reddish, legs reddish, tarsi black; elytra with a subapical spot on each side and suture black (Tex.) *jacobina* Linne
35. Elytra with six black spots, the two anterior subsutural spots occasionally united at suture (S. E. U. S.) *sexpunctata* Oliv.
 Elytra with a common, more or less triangular or subcordate, sutural spot below scutellum and on each side a humeral spot and one below middle black (S. E. U. S.) *sexpunctata albini* Lac.
 Elytra with a wide, common sutural vitta of irregular outline black.
 (S. E. U. S.) *sexpunctata ephippium* Lac.

Anomæa Lac.

Anomæa is not a synonym of *Antipus* as given in the Leng catalogue. In his "Monographie des Phytophagides" Lacordaire recognized only one genus—*Clytra*—in his tribe Clytrini but with thirty-nine subgenera. Chapuis in "Genera des Coléoptères" elevated some of the subgenera to generic rank and one of these was *Titubæa* with *Anomæa*, *Antipus* and a few others as subgenera. This course was later more or less followed by those treating the species of the tribe Clytrini. However, Crotch in 1873 and Leconte and Horn in "Classification of Coleoptera of North America" accepted *Anomæa* for the North American species while Jacoby in the *Biologia* uses *Titubæa* for the Mexican species with *Anomæa* as synonym. Both names were proposed by Lacordaire in the same publication but *Anomæa* has page precedence. Of the three, *Antipus* is the older name but the typical species of the latter, which occur only in Africa, are said to have smaller and more rounded eyes, which are not obliquely placed and the epistoma is not emarginate as in *Anomæa* but broadly lobed in front. These differences and the different habitat ought to be sufficient to retain *Anomæa* for the American species, at least for the present, till the troublesome tribe Clytrini has been thoroughly revised.

There is apparently very little to separate *Titubæa* from *Anomæa*. Besides the differences in markings the males of the former have the elytra not pubescent and the epistoma is not quadridentate, however, this latter character is in some males of *Anomæa* scarcely noticeable.

The species of *Anomæa* are more or less troublesome. They are separated by scarcely any good structural character, but mostly on coloration and markings. These are more or less variable and differ also, in some species at least, a good deal in the two sexes, which makes it rather difficult to correctly associate the males and females of certain species if they are not taken together in the same locality. This is well illustrated by *rufifrons* and *mutabilis*, of which the females, which Lacordaire refers to these two species, scarcely differ from each other and therefore *mutabilis* was regarded by him a dubious species. However, *mutabilis* is apparently a good species and the females Lacordaire

associated with the males of *rufifrons* are in my opinion all females of *mutabilis* and that the females of *rufifrons* are not positively known so far. There is also a possibility that Lacordaire's varieties A and C of the males of *rufifrons* do not belong there. At least it seems that the later described *högei* is his var. C, which he describes as having the elytra immaculate "sans aucune trace de raie suturale et de lineoles marginales noires" which are the essential characters of *högei*. Var. A is apparently very close to the males of *nitidicollis* described below and a single male, I place provisionally with the males of *crassicornis*,* a new species described further on, agrees fairly with the description of typical *rufifrons*. The males of these species—*rufifrons*, *crassicornis*, *nitidicollis* and *högei*—differ very little from each other and may easily be considered varieties of one species but the females are quite distinct and differ a good deal.

In the following short revision I have attempted to straighten out our North American species of *Anomæa*; however, a thorough and critical study of the North and Central American species with large series of specimens of each is desirable to place the species of this genus on a sound base. The male and female often differ very much from each other in form and in some species in coloration and markings of elytra also. The males have the anterior legs much longer, the anterior tibiæ arcuately curved near apex, the head usually much larger, the pronotum more or less so and the elytra pubescent, narrower and more parallel than the females. The front and middle tibiæ of the females of all our species are not straight but slightly arcuate and elytra usually not pubescent.

KEY TO THE SPECIES OF ANOMÆA LAC.

Females

1. Pronotum flavous 2
- Pronotum black, elytra reddish with suture, lateral margins more or less and a transverse, post-median fascia black, the latter occasionally interrupted medially *mutabilis*

* Since the above remarks were written I have seen another male of this form from Coral Gables, Fla., in Nat. Museum collection, placed on the same pin with a typical female of *crassicornis*, both possibly taken in copulation. These two males are very close to the males of *nitidicollis* from which they seem to differ only in coloration of femora and stouter antennal joints.

2. Elytra reddish with a common, large, black, submedian sutural spot, extending frequently to the lateral margin, the latter in great part and legs black, pronotum very shining *nitidicollis*
 Elytra flavous with a common, large, black submedian sutural spot, lateral margins entirely pale, all the femora and middle and hind tibiae pale, pronotum rather dull *högei* var.
- Elytra flavous with a common black sutural vitta, which is often laterally more or less dilated, in *laticlavata* the elytra are occasionally black, with flavous humeral and apical spots 3
3. Elytra with suture and lateral margins black 4
 Elytra entirely pale 8
4. Fourth antennal joint subtriangular, about as long as wide at apex, following joints rather stout and usually wider than long. *crassicornis*
 Fourth antennal joint not subtriangular, usually longer than wide at apex, following joints less stout and about as long as wide at apex..... 5
5. Elytra with common black sutural vitta more or less arcuate externally, or dilated from before middle but narrowing near apex, occasionally by extension of black coloration the elytra are black with large humeral and apical spots pale 6
 Elytra with suture narrowly black as in males of *laticlavata* straight, not arcuate externally 7
6. First three or four antennal joints pale, the following black; femora and some of the tibiae pale *laticlavata*
 All the antennal joints and legs black, pronotum wider var. *floridana*
7. The first three or four antennal joints pale, the following black; legs pale, except anterior tibiae and tarsi black var. *kansana*
8. Sutural and lateral margins pale, antennal joints five to eleven, anterior tibiae, all tarsi and underside more or less black *högei*

Males

1. Pronotum and elytra flavous, the latter without distinct transverse postmedian fascia* 2
 Pronotum black or very nearly so, elytra more or less reddish with a wide, post-median, transverse fascia black, which is occasionally interrupted at middle on each elytron *mutabilis*
2. Elytra with suture and lateral margins black 3
 Elytra with suture and lateral margins pale *högei*
3. Elytra with suture narrowly black 5
 Elytra usually with a common wide sutural vitta black, which is variable in width and of more or less irregular outline 4
4. Small species, about 6 mm. in length, prothorax shining, scarcely rounded at sides and in form more like that of the females of *crassicornis*. *angustata*

* Occasionally in a specimen of *nitidicollis* faint indications of a postmedian fascia are seen.

- Larger species, about 8 mm. in length, prothorax dull, broadly rounded at sides*crassicornis*
5. Fourth antennal joint longer than wide at apex, following joints about as long as wide6
- Fourth antennal joint subtriangular, about as wide as long, following joints transverse, wider than long7
6. Elytral suture narrowly black, faintly so in var. *kansana*; femora pale. *laticlavata*
- Elytral black, sutural vitta wider, slightly arcuately dilated as in some females of *laticlavata*, head and pronotum distinctly smaller and more like those of the femalesvar. *floridana*
7. All the femora pale, knees blackish*crassicornis* var. Middle and hind femora more or less black*nitidicollis*

Anomœa mutabilis Lac.

This is readily recognized from the other North American species by its black prothorax and black elytral fascia both present in male and female. It varies a good deal but more so in the male than in the female.

The head is more or less distinctly rugose in both sexes, either entirely red, marked more or less with black or entirely black; antennæ black, or the outer joints black, the preceding pale, joints five to eleven transverse, serrate, especially in the males; pronotum either entirely black, or black with apical and lateral margins pale in both sexes, in some males the median part is reddish or yellowish, widening abruptly apically, and at sides largely black or the pronotum black with an antebasal reddish spot, in one small male the entire pronotum is flavous, except a narrow obscure cloud in basal half near lateral margin. Elytra reddish or yellowish with a large submedian fascia, suture, apical and lateral margins behind the submedian fascia black, the latter reduced occasionally to a common sutural spot of variable size and very rarely the spot may be entirely absent; body beneath black, often, especially in the males, last ventral segment and part of the metasternum pale, pubescence moderately long, dense and white, legs black or more or less pale. Length 7-9 mm.

Texas, Mexico.

I rather would place the *ruficauda* of Foersberg with this species than with *laticlavata* on account of its black pronotum, which never occurs in *laticlavata* nor any other of our species, except *mutabilis*.

Anomœa nitidicollis Schffr.

I described this species from a single female in the Dietz collection but both sexes were afterwards collected at Alpine, Texas, by Mr. G. P. Engelhardt and the late O. C. Poling; also in Brewster Co., Tex., by Mitchel and Cushman. The males differ a good deal from the females and more than in any other species known to me.

Male allotype: General form and coloration of *laticlavata* but larger. Posterior part of head behind the eyes smooth and shining, front more or less closely rugose; antennæ rather strongly serrate, first four joints pale, the following black; pronotum flavous, more or less dull; elytra slightly paler than pronotum, pubescent as usual, suture and the greatest part of lateral margin medially narrowly black; body beneath except prothorax black, covered with dense, white pubescence; femora flavous, apex only or entire femora marked more or less with black, or entirely black, especially the hind femora; tibiæ and tarsi black. Length: 9 mm.

Type and paratypes in Nat. Museum collection, paratypes in my collection.

While the coloration varies very little except that of the legs, I have one specimen with a lateral black median spot which extends inwardly to about middle and another one with a short, obscure line at middle of each elytron but in both the pronotum remains unicolorous flavous.

The female as usual is more robust, the head and pronotum very shining, the former not or very feebly wrinkled between and below the eyes; color reddish above, scutellum, elytral suture, apical and lateral margins, the latter in about apical third, narrowly black and at about middle a large transverse black fascia of irregular outline; this fascia is variable and sometimes reduced to a large, common, black sutural spot; body beneath, except prothorax, and legs black, clothed densely with white pubescens.

While all the females seen agree with the above description I have one small specimen (7 mm.) from Round Mount, Texas, which has an elongate dark mark between the eyes and on each side of pronotum, occupying about basal half, a large, reddish-

brown spot, but otherwise agrees with the larger typical specimens. On account of the coloration of head and pronotum it could have been taken for a variety of *mutabilis*, but the very smooth, shining, scarcely wrinkled head removes it at once from that species, which have the head, between and below the eyes, more or less distinctly rugose.

***Anomoea crassicornis* new species.**

FEMALE: Similar to *laticlavata* but larger, with heavier and more strongly serrate antennal joints.

Head unicolorous flavous, shining, almost smooth and scarcely wrinkled between and below the eyes; antennæ black but first joint pale; second and third joints very small, third narrower than second, fourth longer than the two preceding joints, wide and subtriangular, following joints rather strongly serrate. Pronotum flavous, more or less evenly rounded at sides; surface shining, impunctate. Elytra flavous with a wide, common sutural vitta of variable size and lateral margin narrowly but not reaching base nor apex, black; surface distinctly, irregularly punctate, punctures at apex obsolete, near suture two or three, more or less complete impressed striæ. Body beneath black, densely clothed with cinereous hairs, except prothorax which is flavous and shining; femora, middle and posterior tibiæ flavous, anterior tibiæ and all tarsi black. Length 8.25 mm.

Florida: Biscayne Bay (Hubbard and Schwarz); Pleasant Lake, near St. Petersburg, May (Doll); Miami (O. Dietz, P. Laurent); Homestead, May (Mozier); Coral Gables, March.

Male, allotype: Differs from the female as usual in form, larger head and longer anterior legs. Head flavous, posterior part smooth, shining, anteriorly rugose; antennæ as in the female, but first, second and third joints pale. Pronotum dull, impunctate, except for a few, vague punctures seen laterally. Elytra flavous, with a rather wide, common sutural vitta of irregular outline and lateral margins black, the black coloration of the latter not reaching base nor apex. Body beneath black and densely pubescent, except prothorax and last ventral segment at apex pale; femora pale, at apex more or less and tibiæ and tarsi black. Length: 8 mm.

Florida: Homestead, May (Mozier).

Type, allotype and paratypes in National Museum collection, also paratypes in my collection.

Two males are colored like the males of *laticlavata*, that is the sutural vitta is very narrow, they are larger and are very near

the males of *nitidicollis*, but besides the differences given in the table the antennal joints are a little stouter in this species.

The common black sutural vitta of elytra of both sexes is variable, in some specimens it is very wide of more or less regular outline, in others it is narrower anteriorly but more or less dilated apically and in a few specimens the suture is narrowly black as in some *laticlavata*.

Anomœa laticlavata Forst.

Typical specimens of this common and well known species differ as usual in form in both sexes and also in elytral coloration. The antennæ are rather feebly serrate with the fourth joint usually longer than wide at apex or nearly so and more feebly dilated. In the female the punctuation of elytra is variable from feebly to distinctly punctate; occasionally two or three, more or less complete, longitudinal stria-like impressions are present near suture, which are in some specimens only faintly indicated; the color varies from flavous with a black sutural vitta of variable size to black with humeral and apical spot on each elytron pale, but in all the black marginal vitta usually reaches the basal margin which also is generally narrowly black; the legs are pale, anterior tibiæ either entirely or partly and tarsi black, specimens occur with middle tibiæ more or less to all the tibiæ and hind femora also black; the underside is generally black, occasionally the last ventral segment and pygidium more or less pale, densely pubescent.

The males differ from the females as usual in having the head and prothorax larger, the elytra sparsely pubescent more slender and parallel, the anterior legs elongated with tibiæ curved near apex; the upper surface is flavous, elytra slightly paler with suture more or less narrowly black but apparently never as widely black as in the more feebly marked females. Length: 5.75-8 mm.

It occurs in the entire Atlantic Region, except possibly Florida, to Ohio, Wisconsin, Minnesota, Nebraska and South Dakota.

Anomœa laticlavata kansana new variety.

The females differ from typical *laticlavata* in having the elytra with a more or less straight, narrow black sutural line as in the males of typical

lati-clavia. The single male of this form I have seen has only the sutural bead of elytra blackish and the lateral margin narrowly black from about middle to base, but basal margin pale; all the femora and tibiae pale, tarsi black; the fourth antennal joint is nearly as wide at apex as the fifth, the following joints as in typical *lati-clavia*. Length: 7-8 mm.

Kansas: Medora (Knaus) type, Benedict (Knaus).

Paratypes in Mr. Knaus' collection.

Two female specimens from the Dietz collection labelled "Kansas" have the elytra very sparsely pubescent as generally seen in males but do not differ otherwise. It is an unusual character in the females and the only species in which the elytra in both sexes are pubescent is the Mexican *villosa*, which, however, is colored like *mutabilis*.

From the description it seems to be trivial to separate this variety from the typical form but in a series of specimens of both placed together, the differences are very obvious.

Anomoea lati-clavia floridana new variety.

MALE: Differs from the males of typical *lati-clavia* in having the head and pronotum smaller than usual, more like the females of the typical form; antennae black, first joint pale and more or less so the second and third; the black sutural vitta of elytra narrow, not straight, but somewhat arcuate externally as in some females of *lati-clavia*; the black marginal vittae at sides moderately wide but narrower towards base, the latter also narrowly black; underside and about basal third of pronotum black, the latter anteriorly pale, the former densely pubescent; femora pale, apex and tibiae and tarsi black.

FEMALE: Less slender and more robust than the male, pronotum and elytral vitta wider, all the antennal joints and legs black. Length: 7 mm.

Florida: Rockbluff, April (Leonhard).

A paratype in the collection of Mr. H. Dietrich.

The basal margin of the pronotum is narrowly black, the prothorax below is pale anteriorly and black posteriorly in the few specimens seen; this, however, occurs also occasionally in both sexes of typical *lati-clavia*.

A peculiar and aberrant form which possibly is a distinct species, though the female scarcely differs from those of typical *lati-clavia*. The head of male and female is alike but the eyes in the former are slightly larger, the prothorax is narrower in the male and less broadly rounded laterally than in the female,

the narrow, black sutural vitta of the males is not straight as in the males of *laticlavia* but laterally more or less arcuately dilated as in some more feebly marked females of the latter. To any one more intimately acquainted with these insects the males look at first sight more like very slender females, but the elongated front legs, pubescent elytra and last ventral segment without the usual fovea of the females show that they are males. There is another species so far recorded in which both sexes are nearly alike in form and that is the Mexican *sphacelata*, but that species is differently colored and the prothorax is apparently narrower in the female than in the male.

Anomœa angustata new species.

MALE: Narrow, slender, above flavous except antennal joints four to eleven, antescutellar lobe of pronotum, scutellum, a moderately wide vitta at lateral margins of elytra, not reaching base nor apex and a very wide common sutural vitta, rather suddenly narrower around scutellum but more gradually narrowing apically, black, the common sutural vitta laterally nearly straight in outline and slightly more than twice as wide as the lateral pale space. Body beneath black, densely pubescent, except prothorax entirely and a narrow, longitudinal space on last ventral smooth and flavous; femora and hind tibiæ pale, anterior and middle tibiæ and tarsi black.

Head and pronotum more like those of the females, small, the sides of the latter feebly rounded and surface smooth and shining; elytra elongate parallel, not pubescent, irregularly punctate, punctures near suture forming more or less regular rows; anterior legs elongate with tibiæ slightly curved near apex. Length: 6 mm.

Florida; Enterprise (O. Dietz).

This is another aberrant species related to *floridana* and the Mexican *sphacelata* of which I unfortunately have only one male. The antennæ are formed as in *floridana*, also the head and prothorax very nearly as in the latter with which I had placed it for a time as an aberration. But the elytra apparently not pubescent, the very wide sutural vitta, the base of elytra and prothorax above and below pale, not margined with black and the hind tibiæ pale decided me to give it a name. The elytra of the male without pubescence in itself is an unusual character in this genus and the pubescence being usually sparse, abrasion by handling, etc., might have caused it, but even in old worn

specimens of several species, at least some of the hairs on the surface and sides are present. Additional specimens of both sexes will possibly give a better idea of the relationship of this peculiar insect.

Anomœa högei Jacoby.

This species is easily recognized by its entirely pale upper surface without black fasciæ or black sutural and lateral vittæ of elytra. It is described from Mexico from a single male and three females. The male type is entirely pale above including the scutellum, the underside pale, except metasternum which is black, tarsi black, lgs pale and the antennæ black except the first four joints which are pale. The females colored as the males but the underside black. I have several specimens of each sex from Texas which show that this species is also variable. In the male the anterior tibiæ are either pale, or partly so and the rest black or entirely black, also in the female, the scutellum in the latter is apparently always pale, in the male from entirely pale to entirely black; the metasternum and ventral segments are more frequently black with the last ventral segment only pale. One of my females has the suture of elytra below middle for a short distance a little darker, also the lateral margin; in another female the suture from above middle to nearly to apex is brownish and on each elytron are two short, dark lines, one on the disk far beyond middle and one near the lateral margins. Another female on the same pin with a typical male from Victoria, Texas, in the National Museum, taken on *Cassia* sp., has behind middle of elytra a distinct, large, blackish common sutural spot as occasionally found in certain females of *nitidicollis*, the scutellum is blackish but the lateral margin of elytra is pale, the pronotum and elytra are flavous and duller than in the latter.

This species is generally larger than *latipectus* with more strongly serrate antennal joints especially in the males, the anterior tibiæ of *högei* are more strongly curved near apex and the elytra in both sexes are more finely punctate than in the former. Length: 7-8 mm.

Texas: New Braunfels, Gainesville, Victoria, Dallas, Frt. Worth.

Gynandrophthalma Lac.

Anomæa militaris and *arizonica* belong in this genus, which differs from *Anomæa* in both sexes being alike in form; the anterior tibiæ are straight, not elongated nor arcuate apically in the male and are the same in both sexes. The eyes are also relatively smaller, more evenly rounded and scarcely emarginate, the epistoma is arcuately emarginate and in the male not quadriangulate, at least not in the two North American and the European species known to me, and the elytra in the males are never pubescent. There is also very little doubt that the Mexican *Anomæa humerigera* Lac. belongs here. It was described from a single female and is closely allied to my *arizonica*. Mr. Jacoby in the *Biologia* recorded only a single female of *humerigera* from La Parada, Mexico; this has an additional, small, red spot near apex of each elytron, which would bring it close to *militaris*. More Mexican material may show that the three are variations of one species.

In the table of genera of the subfamily Clythrinae in *Genera Insectorum*, the authors separated the genus *Gynandrophthalma* from *Titubæa* (including in the latter the subgenera *Anomæa*, *Antipus*, etc.) by having the base of the pronotum truncate but in the description the base is said to be "subsinueuse." In all the species of this genus known to me the base of pronotum is more or less sinuate.

Two species occur in the United States.

Gynandrophthalma militaris Lac.

This species is known so far only from Texas. It is black, elytra bluish with a large humeral and smaller apical spot red. Length about 4 mm.

Gynandrophthalma arizonica Schffr.

Same coloration and size as in the preceding species, but without the red apical spot on each elytron. The anterior tibiæ are occasionally more or less pale, the pronotum in the majority of specimens is more or less faintly clouded with red, the red humeral spot on each elytron is variable and at its apex extends occasionally to the suture as in *Cryptocephalus binominis* Newn.

Coscinoptera dominicana franciscana Lec.*Coscinoptera dorsalis* Lec.

This is not a plain synonym of *dominicana* but a good western race, distinguished by the elytra being distinctly pubescent and generally less coarsely punctate. It is known to me from Texas, Arizona, Colorado and Kansas.

Saxinis sonorensis Jac.

I have a specimen from Albuquerque, N. Mexico, of this species which is so far only recorded from Mexico and Arizona.

Babia Lac.

Crotch was wrong in placing *tetraspilota* as a variety of *quadriguttata*. It is a good species. In the latter and its varieties the lateral margins of pronotum are rather wide, subexplanate, scarcely reflexed and irregularly, somewhat coarsely punctate. In *tetraspilota* as in *humeralis* and *oregona*, a new species, the lateral margins are not explanate but narrowly reflexed with a single row of punctures within the reflexed margin.

KEY TO THE SPECIES AND VARIETIES OF *BABIA* LAC.

1. Lateral margins of pronotum more or less explanate or flattened, the flattened portion confusedly punctate with relatively coarse punctures2
 Lateral margins of pronotum not explanate but narrowly reflexed, within the reflexed margin a single row of punctures.....4
2. Size large, $3\frac{1}{2}$ –5 mm.; elytral striæ on the disk more or less confused and pronotal punctuation generally distinct and rather coarse, especially near the sides *quadriguttata*
 Size smaller 3– $3\frac{1}{2}$ mm.; elytral striæ not confused; pronotal punctuation relatively finer3
3. Form as in *quadriguttata*, sides of pronotum broadly rounded.
 var. *pulla*
 Form narrower and more slender, sides of pronotum feebly rounded.
 var. *tenuis*
4. Elytra black with one or two red spots on each elytron5
 Elytra entirely red7
5. Each elytron with humeral and apical red spot, form narrower and more elongate than *quadriguttata*6
 Each elytron with a red humeral spot only, form of *quadriguttata*.
 humeralis

6. Humeral red spot small, generally extending from the lateral margin to the fourth stria and not extending along the lateral margin to the middle of elytra, size smaller *tetraspilota*
 Humeral red spot larger, extending from the lateral margin to about the second stria and often along the lateral margin to or beyond middle of elytra, size larger var. *texana*
7. Punctuation of pronotum and elytra very fine, almost obsolete..... *oregona*

B. quadriguttata Oliv.

This well known species has generally the serial punctures of elytra irregular and more or less confused with those of the intervals, though specimens occur with the rows of punctures nearly regular. It is our largest species and a common insect in the eastern States but occurs as far west as Texas and Nebraska. Length: 3.5–4.5 mm.

B. quadriguttata pulla Lac.

I refer specimens taken in the Huachuca and Pinal Mts., Arizona, and Yemez Springs, New Mexico, to this variety. They are usually smaller, with finer punctuation and the serial punctures of elytra generally regular. Length: 3–3.5 mm.

B. quadriguttata tenuis new variety.

Narrower and rather more parallel than *quadriguttata* var. *pulla*, punctuation of prothorax fine, the serial punctures clearly defined and the intervals not or feebly punctate. Length: 3.25 mm.

Cheyenne, Wyoming. Type in U. S. Nat. Museum, paratypes in my collection.

B. tetraspilota Lec.

These are the small specimens (2.25–3 mm.) which apparently inhabit the arid region. The pronotum is very finely punctate, the lateral margin narrowly reflexed and the serial punctures of elytra are fine and generally clearly defined, intervals scarcely punctate. The reddish humeral spot of elytra usually extends inwardly to the third or fourth series of punctures. It occurs in Arizona and New Mexico.

B. tetraspilota texana new variety.

Larger than typical *tetraspilota* with humeral and apical reddish spots much larger, the former generally reaching inwardly to the first row of

punctures and along the lateral margin to or below middle. Length: 3-5-4 mm.

Brownsville, Texas. Type and paratypes in U. S. Nat. Museum, paratypes in my collection.

This form was commonly taken by sweeping low vegetation and looks quite distinct from typical *tetraspilota* by the larger size and much larger elytral spots. One specimen has the elytra reddish-yellow with suture narrow and a narrow, interrupted subapical fascia black.

B. humeralis F.

This species is at once known by the absence of the reddish apical spot of elytra. It has the narrowly reflexed lateral margin of pronotum as in *tetraspilota* and var. *texana* and the same pronotal and elytral sculpture but the form is slightly more robust and more like typical *quadriguttata*. Length: 2.5-3.25 mm.

It occurs in Lower California and Mexico.

B. oregona new species.

Slightly larger than typical *tetraspilota*, black, elytra reddish; pronotum nearly impunctate, except a few scattered punctures near apical and basal angles; lateral margins as in *tetraspilota* narrowly reflexed; elytral series of punctures feebly impressed, very faint and scarcely visible at sides, intervals nearly smooth, punctures feebly visible. Length: 3.25 mm.

Waldport, Oregon, July 4. (Engelhardt). Type in U. S. Nat. Museum.

It differs from the var. *texana* in coloration of elytra and finer, almost obsolete punctuation of upper surface.

Monachulus opacicollis new species.

Coloration like *guerini* but pronotum very dull, almost impunctate, with two short, broad black median vittæ, closely placed, which do not reach the apical nor basal margin; elytra feebly shining, the red median fascia laterally narrower than on the disc and interrupted by the very deeply impressed darker ninth stria. Body below and legs black with very faint metallic-blue tint, except prothorax below, mesosternum, anterior legs and base of intermediate femora red. The head and the first five joints of antennæ red, the following black. Length: 2.25 mm.

S. Bernardino Reh., Cochise Co., Arizona, August (Snow).

With the above described male I associate a single female labelled only Arizona, on account of the very dull prothorax

but which has two black spots and the punctuation more evident; the red elytral fascia is broader not narrowing laterally and the underside and legs black with metallic-blue tint except the prothorax beneath which is red.

Besides the characters given above *opacicollis* differs from *guerini* in being more narrowed anteriorly and posteriorly and the eyes are less widely separated. The pronotum of *guerini* is more or less shining and distinctly punctate. *M. opacicollis* is apparently related to the Mexican *scaphidioides* by its very dull pronotum and judging from the description the form of both is alike. The Mexican species has the pronotum black, however, in one of the two teneral specimens, mentioned by Suffrian, the sides of the pronotum are reddish. More material and comparison with Mexican specimens may show that *opacicollis* is a color variety of *scaphidioides*.

***Cryptocephalus notatus sellatus* new variety.**

Like var. *quadrifasciatus* in form, size, sculpture and color, but with the humeral and red apical markings broadly connected laterally.

New Braunfels, Texas (O. Dietz).

This color phase is intermediate, connecting *quadrifasciatus* with *fulvipennis*; it apparently does not occur further north. These Texas specimens are also rather more bluish and the serial punctures of elytra are smaller.

***Cryptocephalus pubiventris* Schffr.**

The three specimens in my collection represent three different forms. One, the typical form, is marked like var. *quadrifasciatus*, the second specimen marked like the above described var. *sellatus*, that is, the red humeral and apical markings are connected laterally, the other specimen has the elytra red with a rather faint, obscure, dark cloud behind middle; a specimen from Fort Grant (Hubbard and Schwarz) in the Nat. Museum has a distinct black mark slightly behind middle of the red elytra and is somewhat intermediate in coloration between the two last mentioned forms.

***Cryptocephalus binominis rufibasis* new variety.**

In this form the elytra, in about basal half, are entirely red, except the basal margin and suture, both very narrowly black; the red apical spot on

each elytron is slightly larger than in the typical form. Length: 4-4.25 mm.

Punta Gorda, Florida, November (W. T. Davis).

***Cryptocephalus multisignatus* new species.**

Narrower and more slender than *quadruplex* or its var. *quadriguttulus*, black, except apical margin of prothorax narrowly, lateral margins in about apical half and on each elytron a small spot near scutellum, a large humeral spot extending at its apex to the suture as in *binominis*, a transverse sub-apical fascia narrowing exteriorly and not reaching suture nor lateral margin, a small apical spot also pygidium with two small apical spots and joints one to five of antennæ reddish.

Head moderately coarsely and distantly punctate; pronotum with sides feebly arcuate, surface finely and distantly punctate, punctures almost obsolete laterally; elytra with rows of rather coarse punctures, the fifth and sixth row more or less confused; prosternum, seen laterally, with a large tooth anteriorly, ventral segments of abdomen feebly pubescent and rather sparsely punctate. Length: 3.5 mm.

Arizona.

The specimen described is a male and will be easily recognized not alone by its markings but also by its more slender form and less arcuate sides of pronotum than in *quadruplex* and its variety.

***Cryptocephalus trizonatus* Suffr.**

In the Leng catalogue the localities given for this Mexican species are Mexico and Arizona. It was first recorded here from Brownsville, Texas, where it is by no means a rare species. I am not aware that it has ever been taken in Arizona.

***Cryptocephalus texanus* new species.**

Very much like the Floridian *bivius* in coloration, markings, pronotal and elytral sculpture but the black pronotal spot near the lateral margins of the latter is always absent in *texanus*, the postscutellar markings on the second interval are obliquely prolonged for a short distance forming the handle of a hatchet-like mark produced by the inward extension and confluence with the subbasal spot on the third interval; the inner one of the two submedian spots on each elytron is situated on the third elytral interval—in *bivius* on the first and occasionally extending more or less to the sutural interval; the inner one of the two submedian spots on each elytron is situated scarcely lower than the outer one while the latter in *bivius* is decidedly so. Length: 5.25 mm.

New Braunfels, Texas. (O. Dietz).

I have seen a small number of this species which superficially resembles *bivius* a good deal and are probably mixed with that species in collections. In one specimen the postscutellar markings unite at apex forming a somewhat heavy letter W, in *bivius*, when united these markings represent a rather arcuate postscutellar fascia. The pronotum is also more distinctly punctate than in *bivius*.

Cryptocephalus cupressi new species.

Form, size and coloration of *leucomelas* with similar markings on pronotum and elytra, except that on each elytron are two submedian spots which do not form a transverse fascia, the inner spot is always separated from the suture by one or two intervals. The umbonal spot on each elytron is generally very large and apparently rarely connected with the juxta-scutellar markings, the latter decidedly more oblique than in *leucomelas* and more or less pipe-like in design; the pronotal vittæ are more removed anteriorly from the apical margin than in the latter species, the outer vittæ are relatively strongly dilated externally and the two discal vittæ more or less so apically. Length: 4-5 mm.

New Orleans, Louisiana (G. P. Engelhardt).

Several pupal cases were collected by Mr. Engelhardt on branches of cypress December 29th and January 2d from which four imagoes emerged April 6th.

The elytral markings are the same as in *texanus* described above, but the latter is a larger and more robust species with more shining smoother pronotum and finer elytral punctures, the pronotum in *cupressi* is rather coarsely and closely punctate.

The submedian transverse elytral fascia in *leucomelas* is more or less variable, but apparently there remains always a common, more or less transverse sutural spot in the specimens in which this fascia is much reduced.

The markings in *cupressi* are more or less longitudinally linear, in *leucomelas* usually transverse; in the latter species are generally one or two small spots near the lateral margin between the subbasal and submedian bands or spots, which are absent in *cupressi*.

Cryptocephalus duryi Schffr.

A specimen in the National Museum collection from Yuma, Arizona, (McLachlan coll.) agrees in form, sculpture of prothorax and elytra with

the Brownsville specimens, except in slightly smaller size, absence of the two dark central vittæ of prothorax and the lateral vitta on each side represented by only a dark, short subbasal stripe, the median and lateral vittæ, however, are very faintly indicated at apex. In the Brownsville specimens a few of the dark punctures of the elytra are connected transversely and longitudinally but in the Arizona specimen all the punctures are clear. These differences may be more or less constant but more material of both is necessary to decide on the correct standing of this Arizona form.

(To be continued)

BOOK REVIEW

Medical Entomology, A Survey of Insects and Allied Forms which Affect the Health of Man and Animals, by William A. Riley and O. A. Johannsen. 476 pp. 8 vo. Cloth. Illus. N. Y. McGraw-Hill Book Co. 1932. \$4.50.

The present work is a review of the "Handbook of Medical Entomology" issued by the authors a decade and a half ago. In the former work the insects and allied forms were considered under the general headings of poisonous forms, parasitic species and species that serve to transmit and disseminate disease. Keys to the various forms of medical importance were grouped together at the end of the text. As the work of revision progressed it seemed more suitable to recast the material and to consider the various hominoxious forms in their systematic order. The text, therefore, has been entirely revised and is not only entirely new work but is presented under its new name. Particular attention has been devoted to pioneer work on the subject as well as to current literature. Extended as the bibliography is, it is hardly necessary to state that it cites only a small fraction of the voluminous literature on the subject. Something of the scope of the work may be gained by the names of its various subject subdivisions: Early suggestions regarding transmission of disease by insects; ways in which Arthropods may affect health of man and animals; crustacea of medical importance; venomous spiders, whip-scorpions and true scorpions; mites, chigger mites, itch mites, and others; Ixodoidea or ticks; Myriapoda or centipedes and millipedes; structure and development of insects; Anoplura or lice; bedbug, assassin bug, and other Hemiptera; Coleoptera; Lepidoptera; Diptera, Culicidæ or mosquitoes and disease; other